pregnancies have rarely occurred in Gheel, and by American doctrinaires the few instances are boldly exhibited as evil effects of the Gheel system. Of the illegitimate pregnancies occurring at the Hospital for the Insane at Harrisburgh, at the State Emigrant Hospital for the Insane, Ward's Island, and at the State Homœopathic Asylum at Middletown, New York, nothing is said. The *possible* cruelties at Gheel are descanted on at length ; the *actual* cruelties and oversights in the Virginia, Utah, and Kentucky asylums are kept in the background. The present reviewer believes that the vast majority of the insane can be best treated in a properly conducted hospital for the insane, but he thinks that the Scotch colony at Kennoway, and Gheel, if they are to be studied at all, should be studied from a purely scientific standpoint. The article of Dr. Schultz views Gheel not from the standpoint of a scientist who takes all the circumstances into consideration, but from the standpoint of one who is unable to rid his mind of preconceived ideas. A very good idea of Gheel may be obtained by combining the picture drawn by Dr. Schultz, and that drawn by Dr. Morton. The transactions are very fair specimens of bibliographical work.

J. G. KIERNAN.

Hydroelectrische Bäder. Kritisch und experimentell auf Grund eigener Untersuchungen bearbeitet. Von Prof. A. Eulenburg, in Berlin. Wien and Leipzig : Urban & Schwarzenberg, 1883.

This monograph of 102 pages, containing twelve wood-cuts and two plates, certainly treats the subject of hydro-electric baths from an entirely new and original standpoint. Since the year 1868, when Bouillon-Lagrange wrote his thesis upon hydro-electric baths, considerable literature has been added to the subject, but unfortunately all the authors, up to the present work, have endeavored to construct an edifice by commencing at the roof and building downward—never, however, reaching a foundation. They have all been very explicit in their description of the manner of application ; their chapters on therapy have been extensive, the diseases cured by this means innumerable, but the physiological action of the various currents, under these new conditions, has until now received but little or no attention. As a direct consequence of this superficial mode of treating a scientific subject, these "hydro-electric," or as they have been commonly called "electric, baths" have fallen from the domain of science to that of charlatanism,

and have been, so to say, monopolized by men who dispensed them for the sole purpose of pecuniary gain, and without the slightest scientific interest. Naturally the baths fell into disrepute. Eulenburg has now, in the book before us, studied the subject from an experimental physiological point of view, and has endeavored to learn how the electric currents act upon the human body when applied by means of the bath.

The first few pages of the monograph are devoted to an historical review of the subject. The experimental part is commenced by investigations of the current intensity, diffusion, and strength. The resistance of the bath fluid itself, and then that of the human body in and out of water, is studied.

The results obtained as regards the resistance of the bath fluid itself are such as we would *a priori* be led to expect.

In regard to the resistance of the human body, the author finds it to vary from 20,000 to 3,000 S. E. This very high resistance of 20,000 S. E. was obtained by the use of dry electrodes, a thoroughly unscientific procedure, as the result obtained is not the resistance of the body alone, but the resistance of the body plus that of the dry electrodes, which is necessarily very great. Neither is the size of the electrodes, nor the amount of pressure used in their application, two important factors in measurement, taken into consideration. Eulenburg also claims that the resistance of the body while in the bath gradually increases during the passage of the current. This fact is so diametrically opposed to what we have been accustomed to find out of the bath, that we think the decreased angle of divergence of the galvanometer needle in E.'s experiments was probably due to secondary currents in the bath itself, thus increasing the resistance, or to polarization in the battery. That the question of current diffusion or current density has not been elucidated Eulenburg admits himself. In the construction and use of the hydro-electric baths he separates distinctly the two ideas of general and local electrization by this means, and justly condemns those authors who have advocated them as a means of local treatment. Two forms of bath apparatus are described, the monopolar and the dipolar. The monopolar has one pole only immersed in the fluid—if the tub is metallic it may itself constitute this pole ; the second pole is then placed upon any part of the body which is out of water. In the dipolar, both poles are immersed in water, and the body lies between them, without, however, coming into direct contact with either. This latter system is the one most in use in hydro-electric institutes.

The faradic bath is not neglected, but more attention is paid to the galvanic as presenting more points of scientific interest. In regard to the choice of a battery, the author recommends for the faradic bath a Bunsen battery. For the galvanic he recommends either an immersion Grenet, a Leclanché, or a gravity battery. It is surprising to see three batteries so different in principle recommended indiscriminately to fulfil one and the same purpose.

Upon page 39, where the author speaks of gradually increasing the strength of the current by "*increasing the number of cells* or by *introducing larger resistances*" into the circuit, he becomes unintelligible.

The author's experiments in reference to the physiological action of these baths are interesting. The results of his investigations concerning sensation and pain are unimportant. The heart's action is reduced. This is more marked in the galvanic than in the faradic bath.

The diminution in the frequency of the pulse persists for some time after removal from the bath. Respiration is but slightly affected. A number of experiments upon frogs are also detailed; these were made for the purpose of ascertaining the influence of the current upon motion. The author's idea in general is that these baths act almost identically with general electrization practised by other methods, but considers this mode of application as the most practical. The chapter on therapeutics is short but complete. The use of the bath is recommended for most all conditions in which general electrization has been found serviceable, also for some cases of certain neuralgic and convulsive affections and for certain vaso-motor trophic neuroses, and for neurotic affections of the skin. The author details a case of paralysis agitans in which the intense continuous tremor was palliated for hours by the use of these baths. There is in our mind no question but that any mineral bath which produces dermal irritation, may fulfil many of the indications which he lays down as requisite for the use of the hydro-electric bath, and that the majority of affections which are benefited by the use of the latter, will also receive benefit from the former.

A description of the construction of the baths and accessory apparatus, together with plates describing a hydro-electric institute, finishes the monograph. All in all the book presents points of great scientific interest and, although the results of many of the author's investigations are in some instances vague and incomplete, he has certainly laid a foundation for future work upon this subject which will be found invaluable. [G. W. J.]